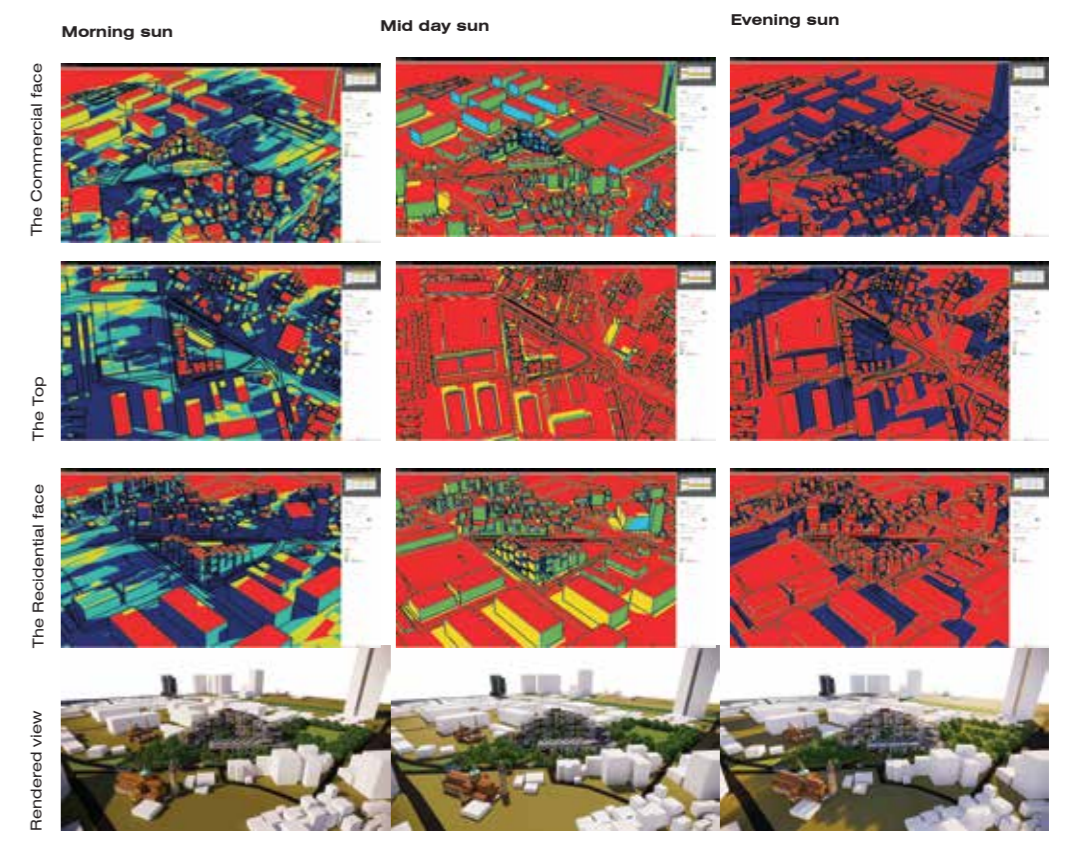
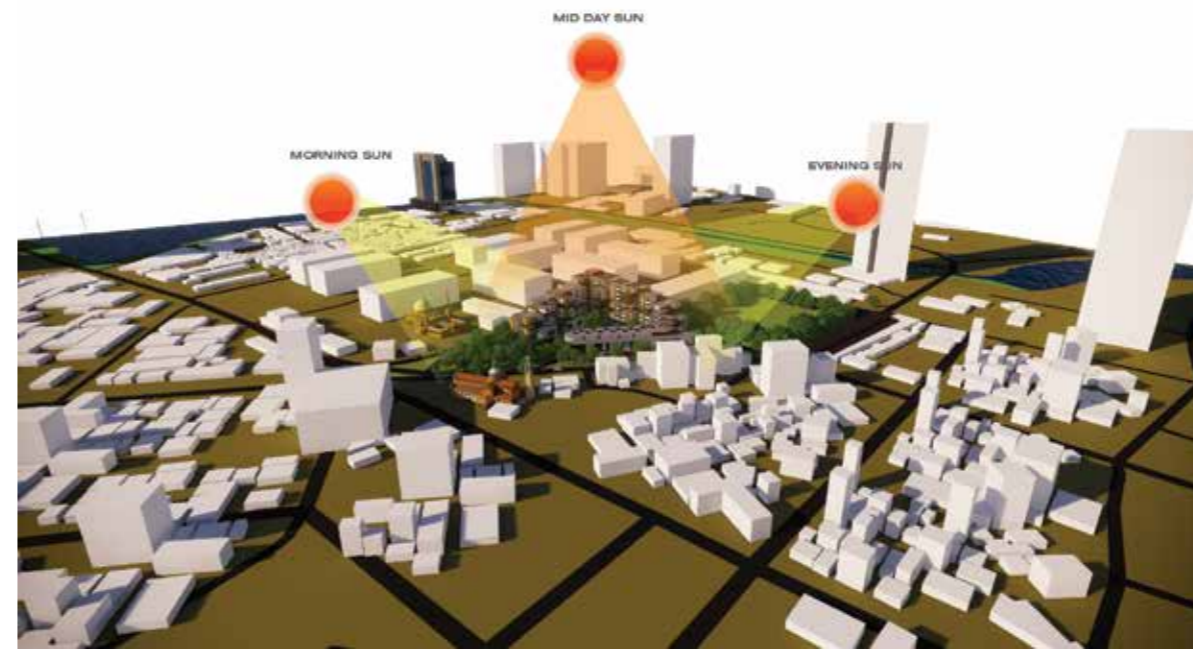


# ENVIRONMENTAL RESOLUTION

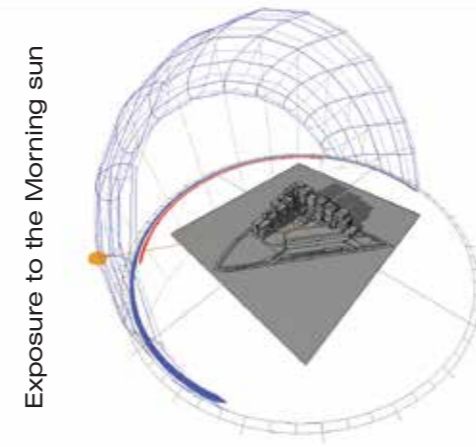
## Ambition

The goal of the environmental resolution for this design, is to achieve a maximum comfort in exterior and interior spaces of the design, through the use of sustainable and passive design strategies. And also to use the available natural resources in maximum to reduce the energy usage of the building.

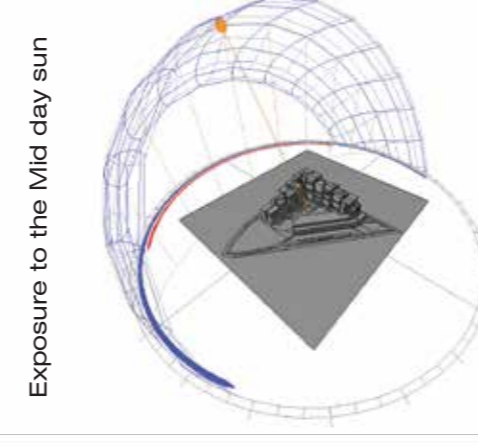


## The sun study

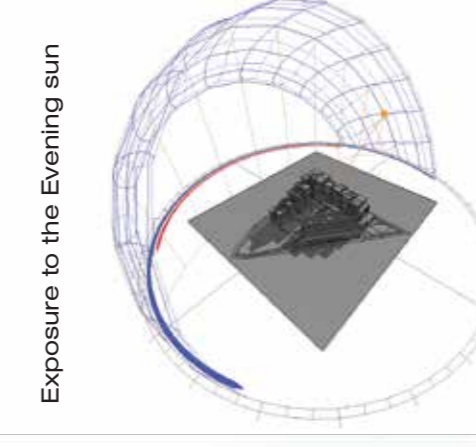
### Response to the sunpath and shadow analysis



**8:00 A.M.**  
During the morning sun light, the eastern elevation of the building will be directly exposed to the sun.  
The west elevation of the building is well shaded and it will project a shadow on the road and the neighboring land in the west side.



**12:00 P.M.**  
At mid day, The south elevation and thereof tops will be directly exposed to the sun.  
with that exposure, according to the building form, it creates a shade on the central recreational area of the scheme.



**4:00 P.M.**  
In the evening, the west elevation and a part of the south elevation will be directly hitting with sunlight.  
This exposure of the building will create a shadow on its lower roof tops and the ground level recreational areas in the east side of the building.

### Interior light level study



The sun exposed roof tops to be used for services activities

Internal corridors and communal spaces will be lit up with natural light, through out the day.

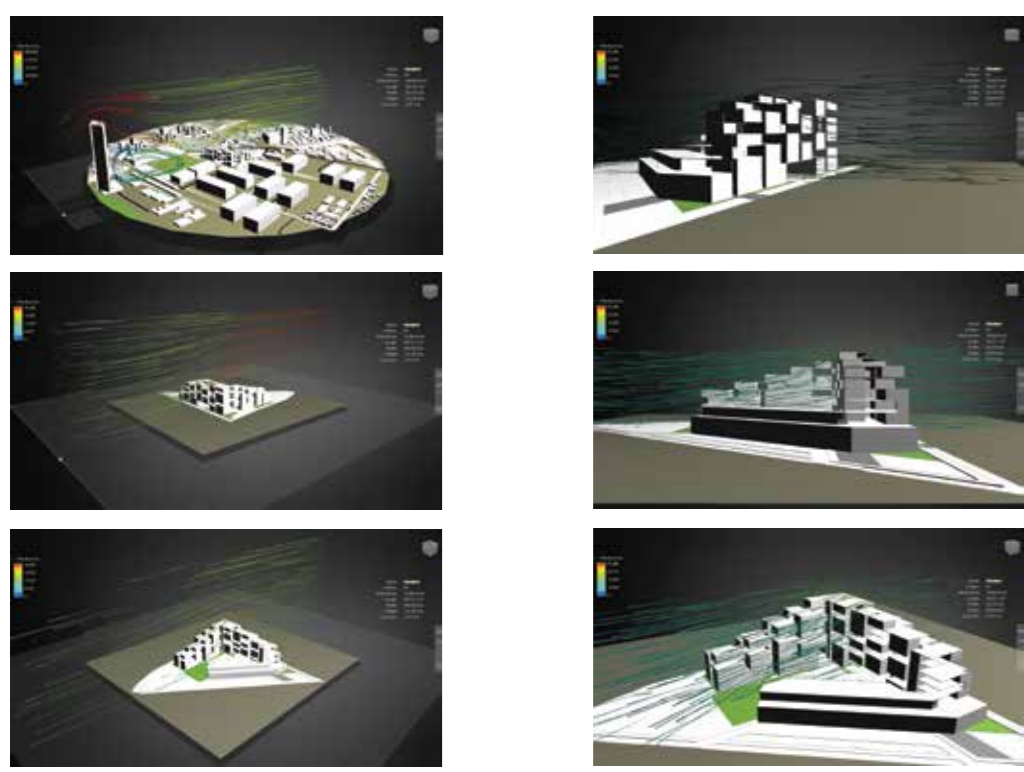
Reflected light will lit up the interior spaces of the building, during the mid day sun light.

The church street food stalls will be shaded with the tree buffer along the road

## The wind study



The wind patterns which will affect on the site location



The turbulence and pressure situation at west elevation due to built environment density formation

Solid void arrangement to let the wind flow through the design as a solution to handle the pressure situation.

## The water management

### Gray water purification

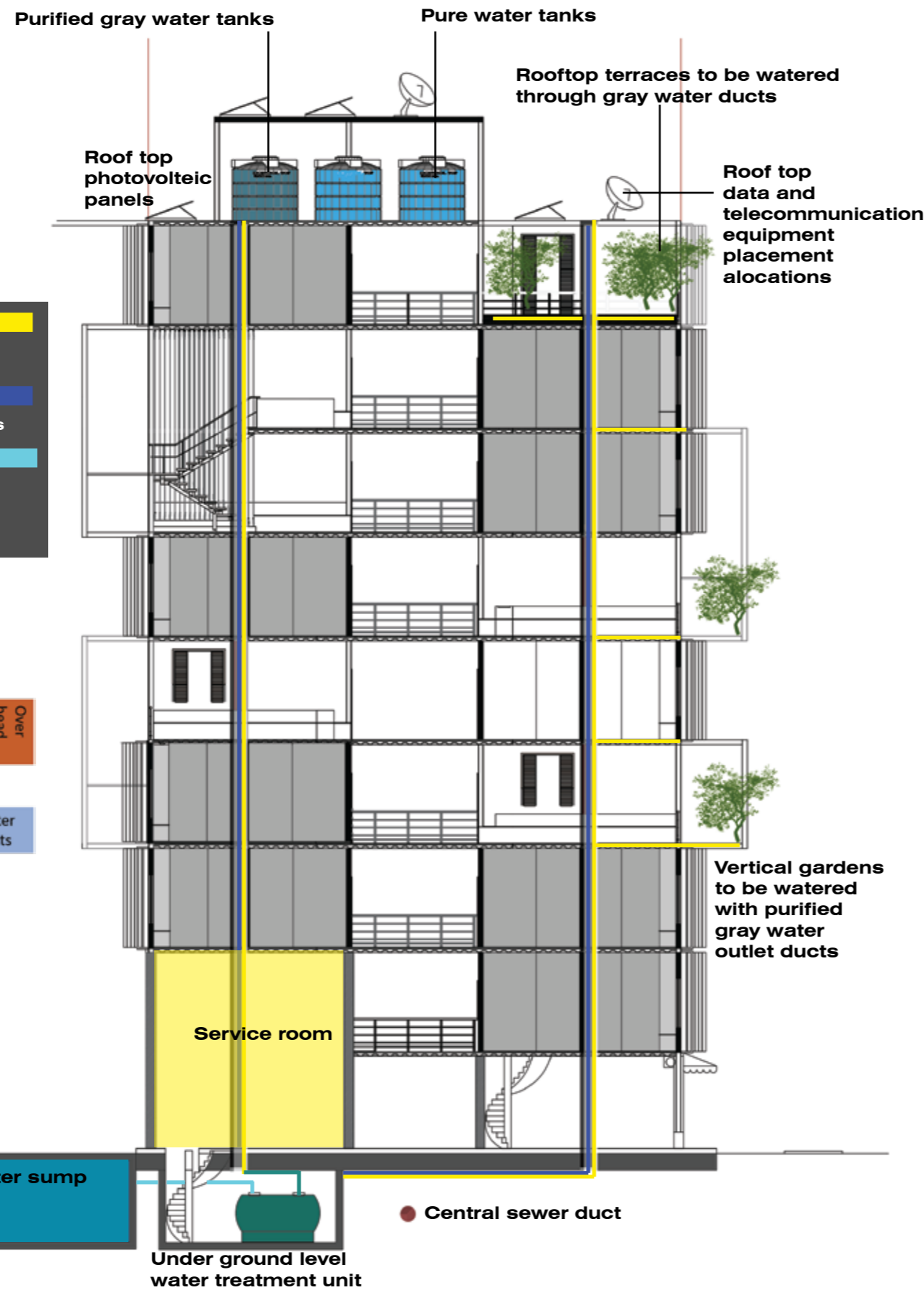
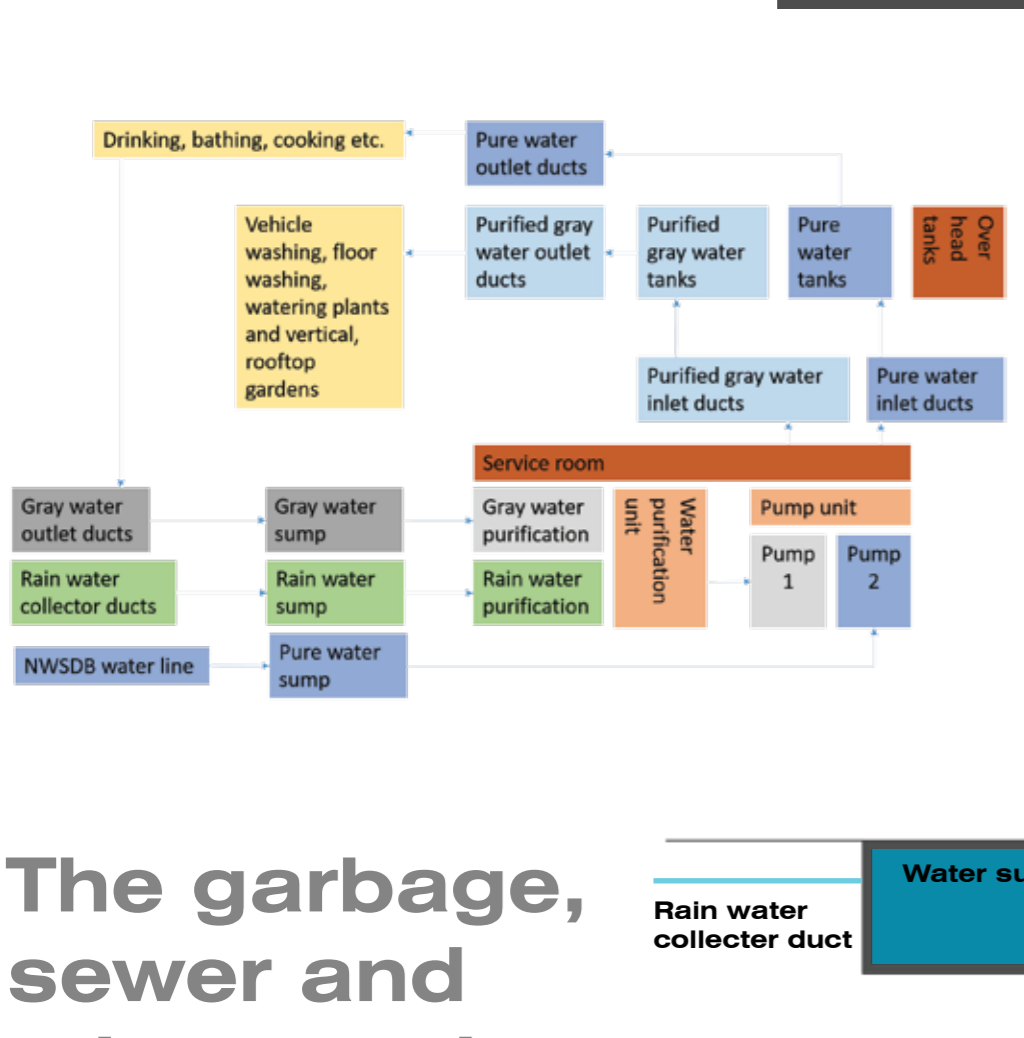
In this design, the used water will be collected into a gray water sump and will be purified through a small scale gray water purification unit.

### Rain water harvestment

The rain water which will fall on the roof area of the building will be collected and stored in an underground sump.

### Water circulation

To fulfill the drinking, cooking etc. purposes of the users, pure water will be procured from the NWSDB water supply line.



## The garbage, sewer and other services



## Lighting and shading strategies

### Low energy LED lamps

For the lighting of interior public and private spaces, Low energy LED lamps will be used with LDR sensor attached switching systems to automatically turn on and off with the natural light availability

### Light wells

The light wells designed inbetween the residential blocks, will well lit up the internal corridors and communal spaces with natural light

### Green shaded openings

The green shaded openings in communal areas and modular units, will provide the required light amount with the filtration of solar heat.

### Shading strategies

#### Green shaded openings

The greenery layered method for shading, will intercepts the solar energy which will fall on the leaves and filters light into the spaces.

#### Corugated sandwich panels and EPS cement panels

Heat insulated corugated sandwich panels will be used to shade the elevations to avoid heating up the internal walls.

#### The building form

The building form has been designed in a cascade formation to shade the lower areas with buildings own shadow during the evening sun

## Cooling and ventilation strategies

### Fans and air conditions

As an active strategy of interior space cooling, the users can be customized the interior space to be cooled through mechanical cooling and ventilation methods such as fans and air conditioning machines.

### The wind velocity cooling effect

With the slightly high velocity wind flow through the voids of the building, the pressure difference has created a wind flow and through the air circulation, it has affected on interior air cooling.

### Cooling through shading

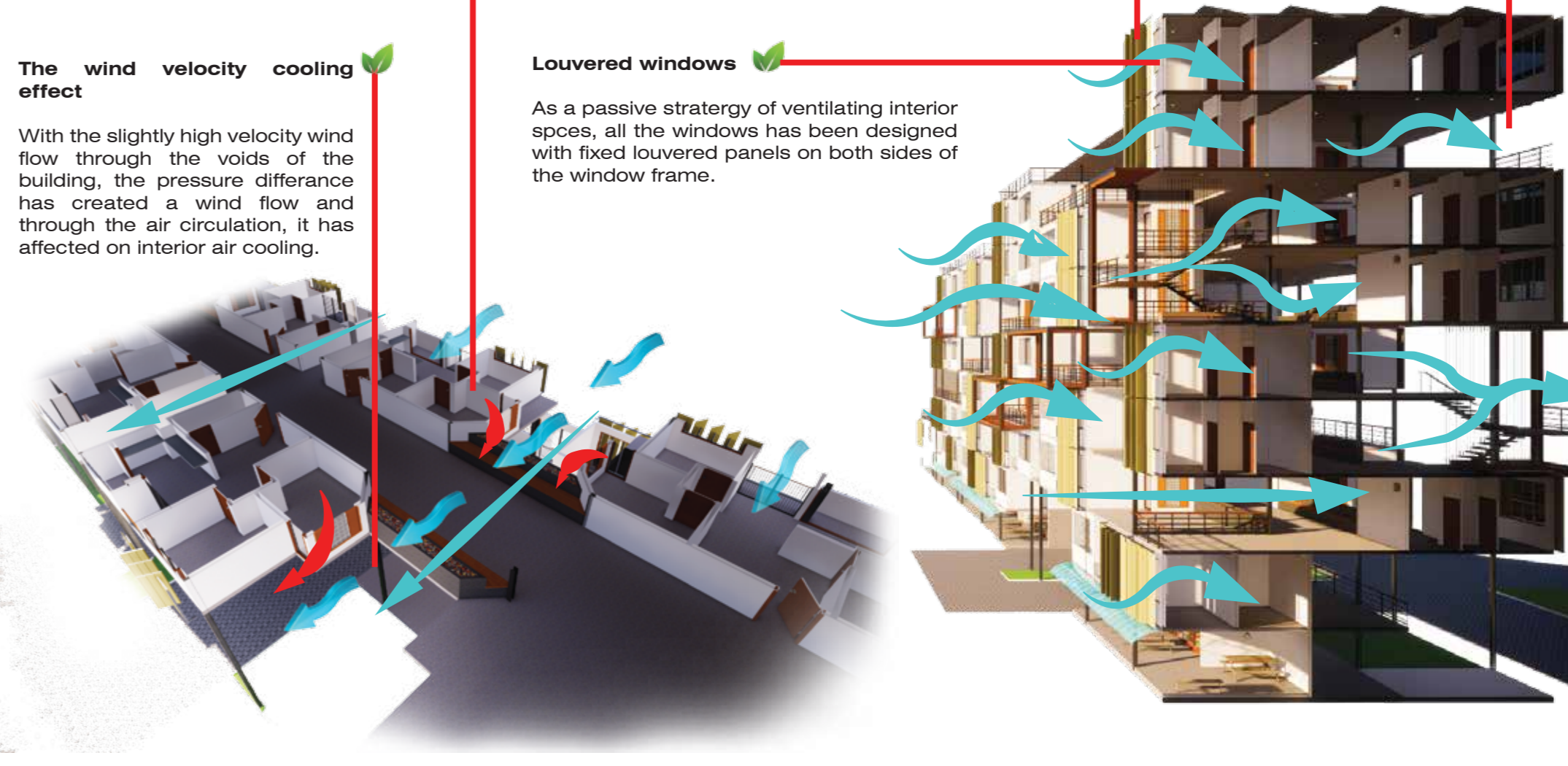
As a passive strategy of cooling spaces through shading, the design has used different shading methods for different spaces. In the facade the corugated sandwich panels has been used to reduce the internal air temperature increment due to solar heat.

### Louvered windows

As a passive strategy of ventilating interior spaces, all the windows has been designed with fixed louvered panels on both sides of the window frame.

### Solid void formation for cross ventilation

The solid and voids has been formed in the structural massing in a way to create a cross ventilative airflow through the building.



# STRUCTURE AND FACADE STUDY

## Ambition

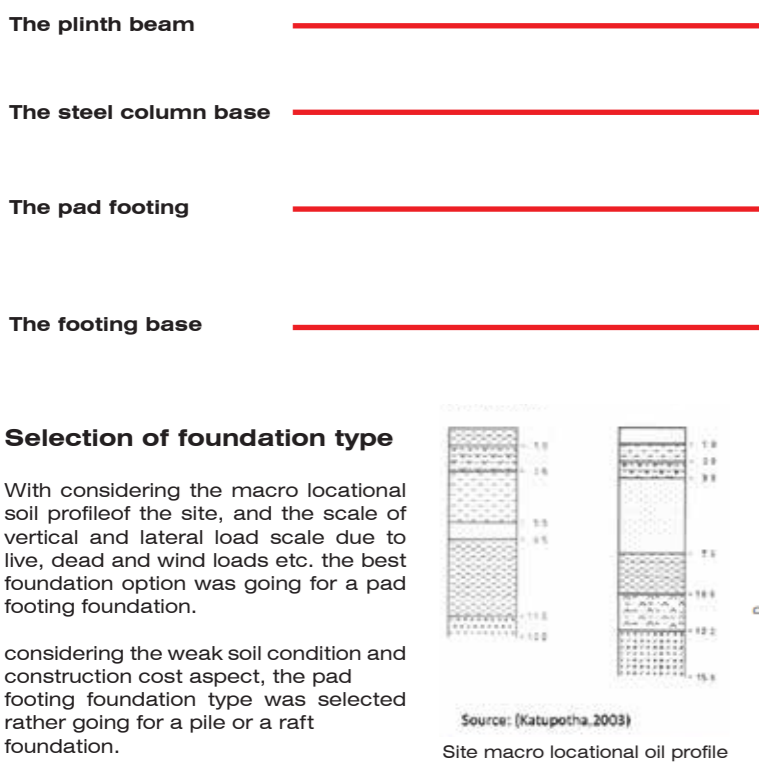
Achieving the structural requirement of the building with a minimum construction cost, time and the flexibility of expansions and additions of structure.

Also to use sustainable materials for the construction with the capability of recycling and reusing with minimum environmental disturbance.

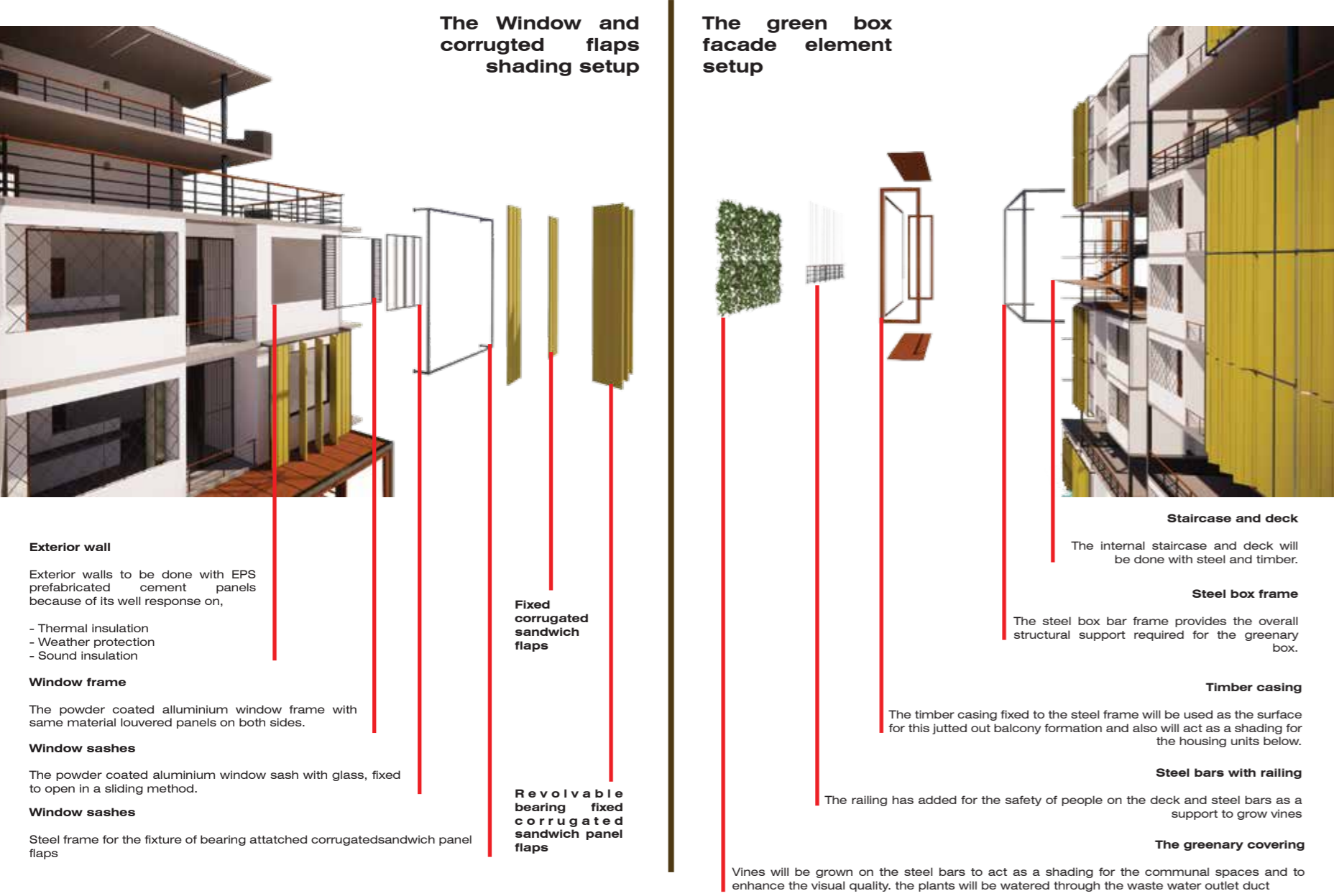
# Sub structure

## Sub structure setting

For this structure, a pad footing type foundation has been used and all the loads will be transferred to the ground through the wide bases of pad footings and it will be reinforced with steel bars and the steel column bases will be adjoined. at the upper level each footing will be tied through a plinth beam for additional strength and widening of load transferring area.



# Facade study



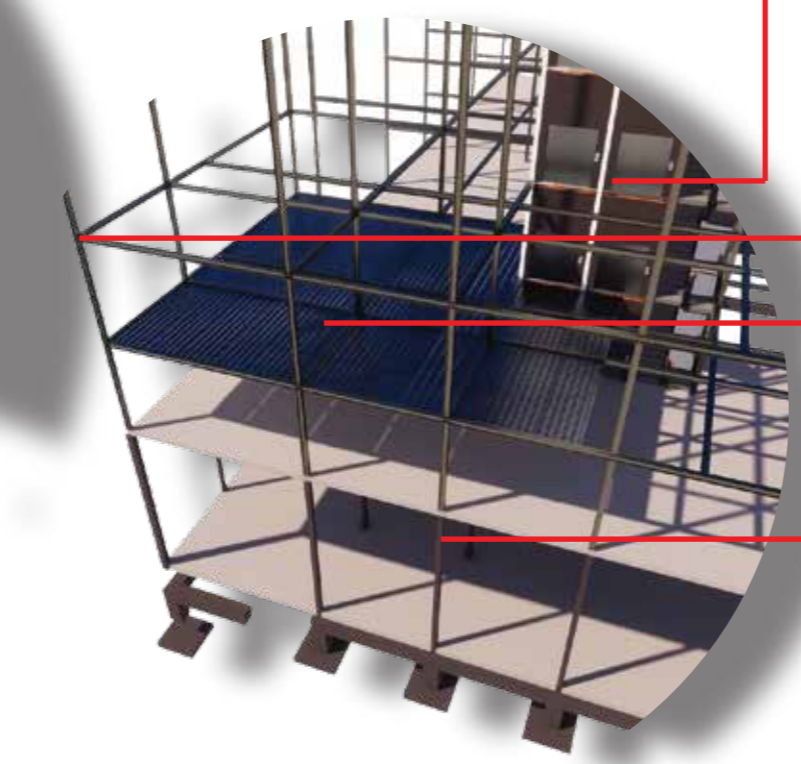
## Fire fighting arrangement



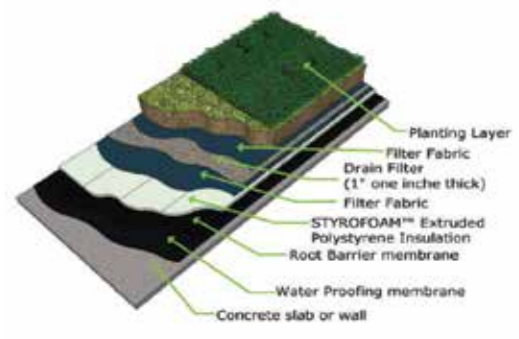
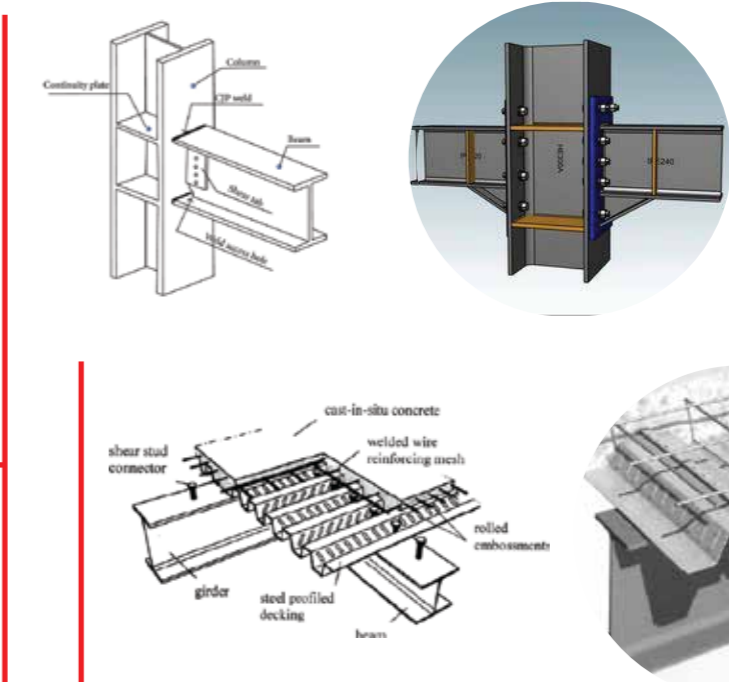
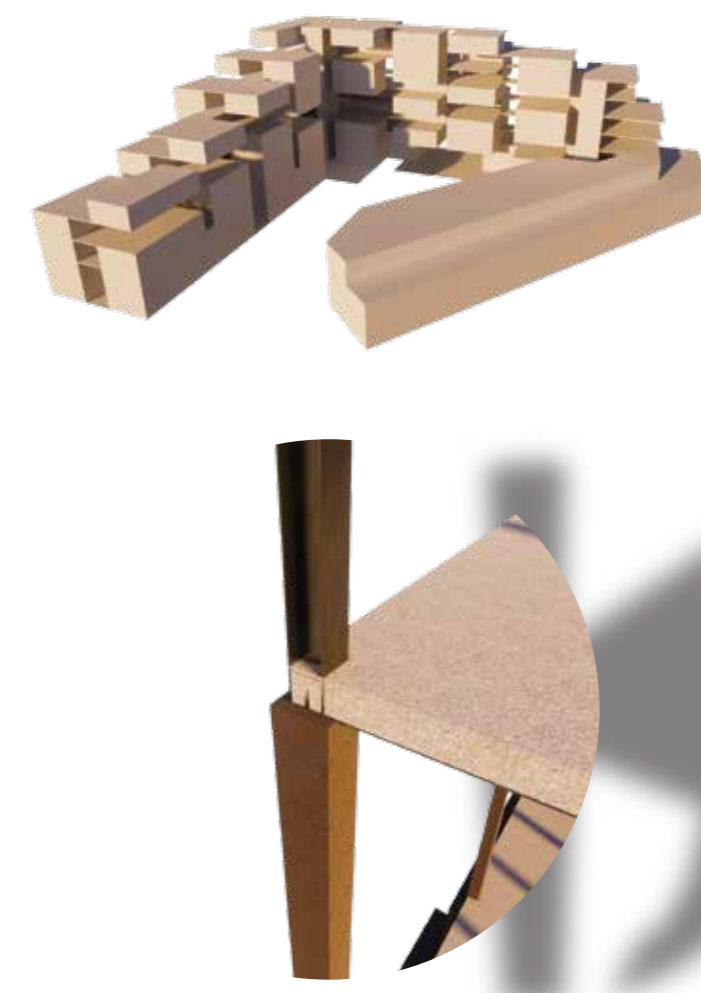
# Super structure

**Steel column and beam joinery**  
The steel columns and beams will be joined through nuts and bolts which will be driven through a welded steel plate with supportive perpendicular steel plates at the joinery end.

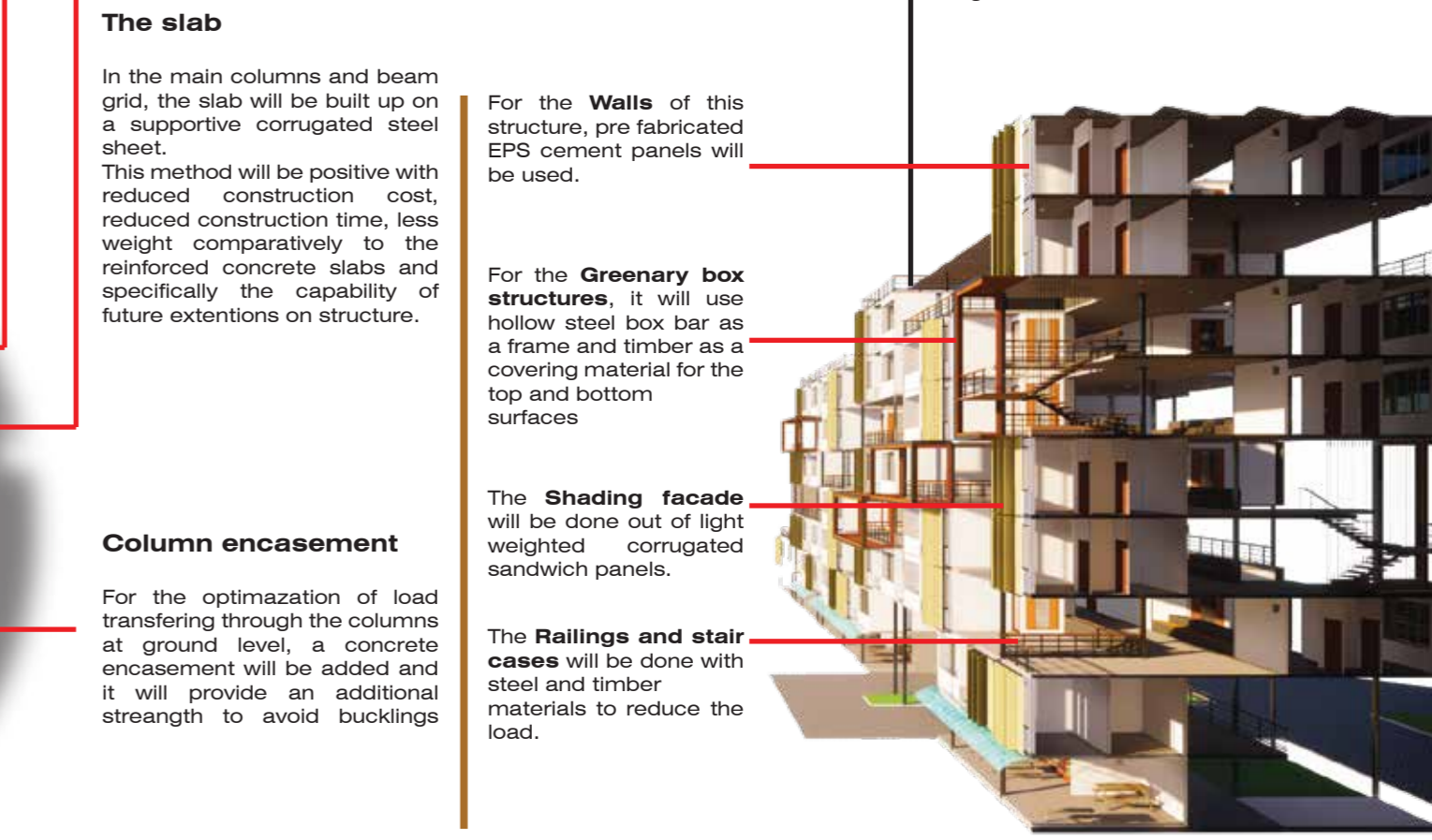
**The elevator and staircase shaft**  
The elevator and staircases shaft will be made out of reinforced concrete. The vertical shaft will be connected with the surrounding parts of the steel column and beam grid. The water tanks will be placed on top of the shaft to well transfer the vertical load to the sub structure.



# Load bearing optimization strategies



The roof terraces on lower roof tops will be used as communal areas. the terrace plants will be watered through a purified gray water outlet duct line which will run through the facade and feed the vertical gardens as well.



## Corrugated sandwich panel shading flaps

This shading strategy has been added to the facade to control the heat gain during the direct facade exposure to the sun. The element is basically settled up with the corrugated sandwich panels which can be revolved within the fixture of steel frame.

## Green box facade elements

These box framed elements, covered with a vertical green face has been added to the facade as a face for the upper level communal spaces.

## Fenestration

In the design, the windows of bed rooms has been covered with the corrugated shading flaps for the shading purposes during the direct sun light exposure.

## Vertical gardening panels

For the living area and kitchen service balconies, it has provided an openable gridded gated balcony and a steel grill panel which can be used for vertical gardening.

## Exterior walls

As the wall material of this building, it has used prefabricated EPS cement panels.

## Services duct arrangement

### The duct lines

In the design, the required provision for duct shafts shall be provided in a recessed manner into the modular blocks. And also this duct formation will be cost friendly and easily maintainable due to its location in the service and maintenance gaps and connection pattern to the block modular dwellings.

For the maintenance purposes, the design has provided access through the maintenance gap openings between every two residential blocks.



## Comparison of street facades - Church street



## Comparison of street facades - Wekanda road



# INTERIOR AND LIGHT STUDY

## Ambition

The goal of interior resolution for this design is to achieve the maximum use of passive strategies to create glamorous spaces.

To create habitable and safe places through hierarchically well connected and well lit spaces.

## FIXTURES AND DETAILING

The washroom will be fixed with a water catchment, a shower and a wash basin.

Recessed LED lighting will be used as an artificial lighting technique which will be using low energy and controlled through LDR light sensor switches.

The bay window adjoined storage cupboard for bed rooms

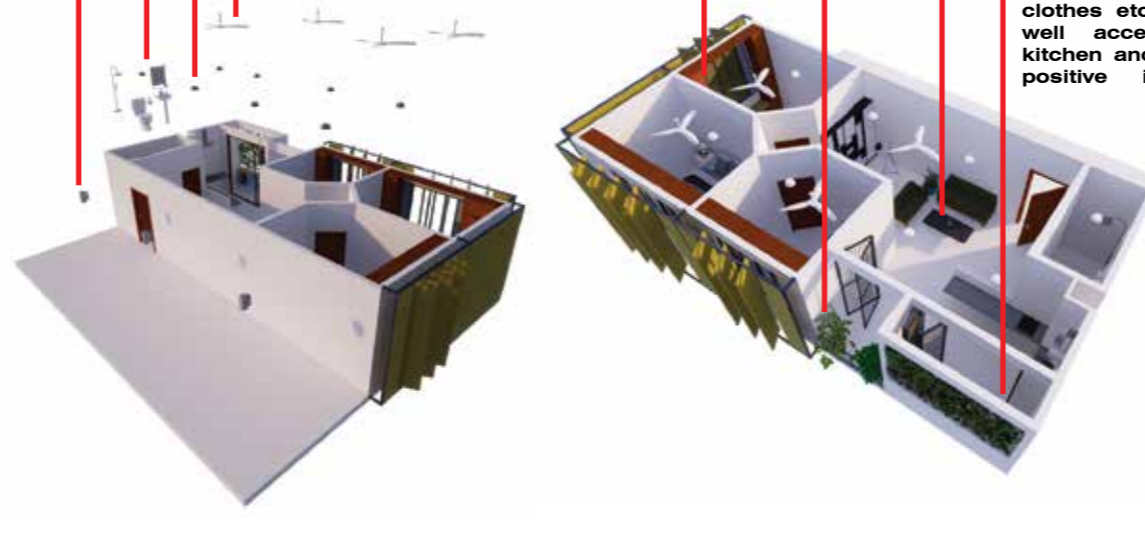
The openable balcony area which adjoined with the living area and kitchen helps to maintain a good light level inside the residential block.

The Living area adjoined with the kitchen and balcony will be an adjoined space which the residents can interact while they are doing on their works.

The service balcony amalgamated with the kitchen will be used for vertical gardening, drying clothes etc. the space is well accessible for the kitchen and that will be a positive in functioning

Wall mounted exterior lighting will be fixed on the corridor opening face of the residential blocks and the road side elevation of the residential blocks.

Fans for artificial ventilation - the users will have provisions to use fans for the interior spaces on their choice.



## LAYOUT STRATEGIES

Well lit corridor areas as a safe place for the residents to go through and interact

Seating areas besides of the corridor for people to gather

A gap between two residential units to give the unstacked quality of the housing layout and for privacy

A maintenance gap between the duct opening space of residential units, for the ease of maintenance in building services



**Inter floor connective communal area**  
- To create interconnection between floor to floor community layers



**Well lit corridors with seating spaces**  
- To create interaction between the people who use the corridors for walkthrough.



**Lobby areas with seating facilities**  
- The lobby area communal space to create interaction between people who live in different floors



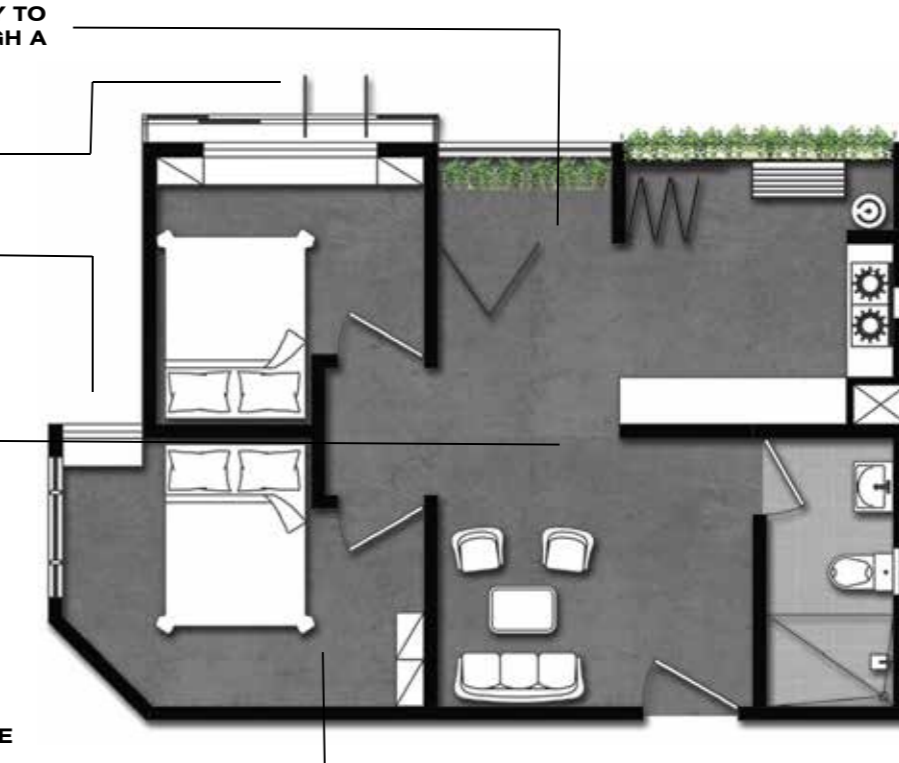
KITCHEN AND LOBBY HAS CREATED IN A INTERCONNECTIVE WAY TO GET THE MAX OUTDOOR VIEWS, LIGHT AND VETILATION THROUGH A LARGE OPENING.

FOLDABLE SHADING DEVICE

JUTTING OUT SPACES TO GET THE NATURAL LIGHT IN DAY TIME.

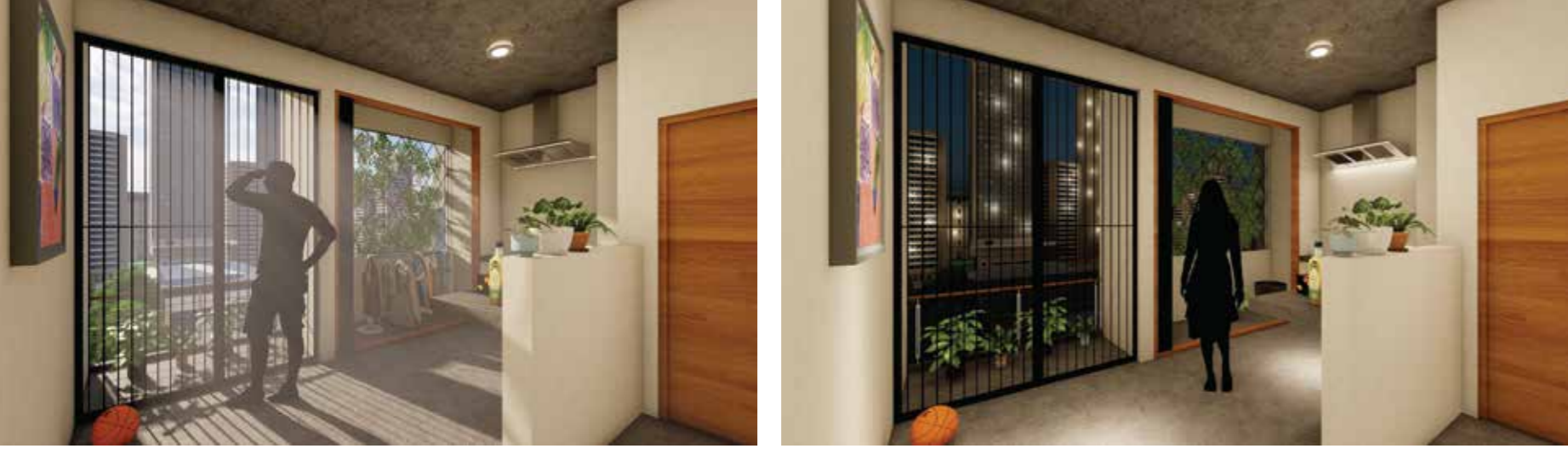
OPEN KITCHEN, LOBBY AND DRYING AREA ACTING AS AN ONE WHOLE AREA TO KEEP THE UNITY OF USERS AS WELL AS SPACES IN THE DWELLING.

BEDROOMS HAVE CREATED TO OPTIMISE THE MAXIMUM USAGE OF SPACE WHILE MAINTAINING PRIVACY.

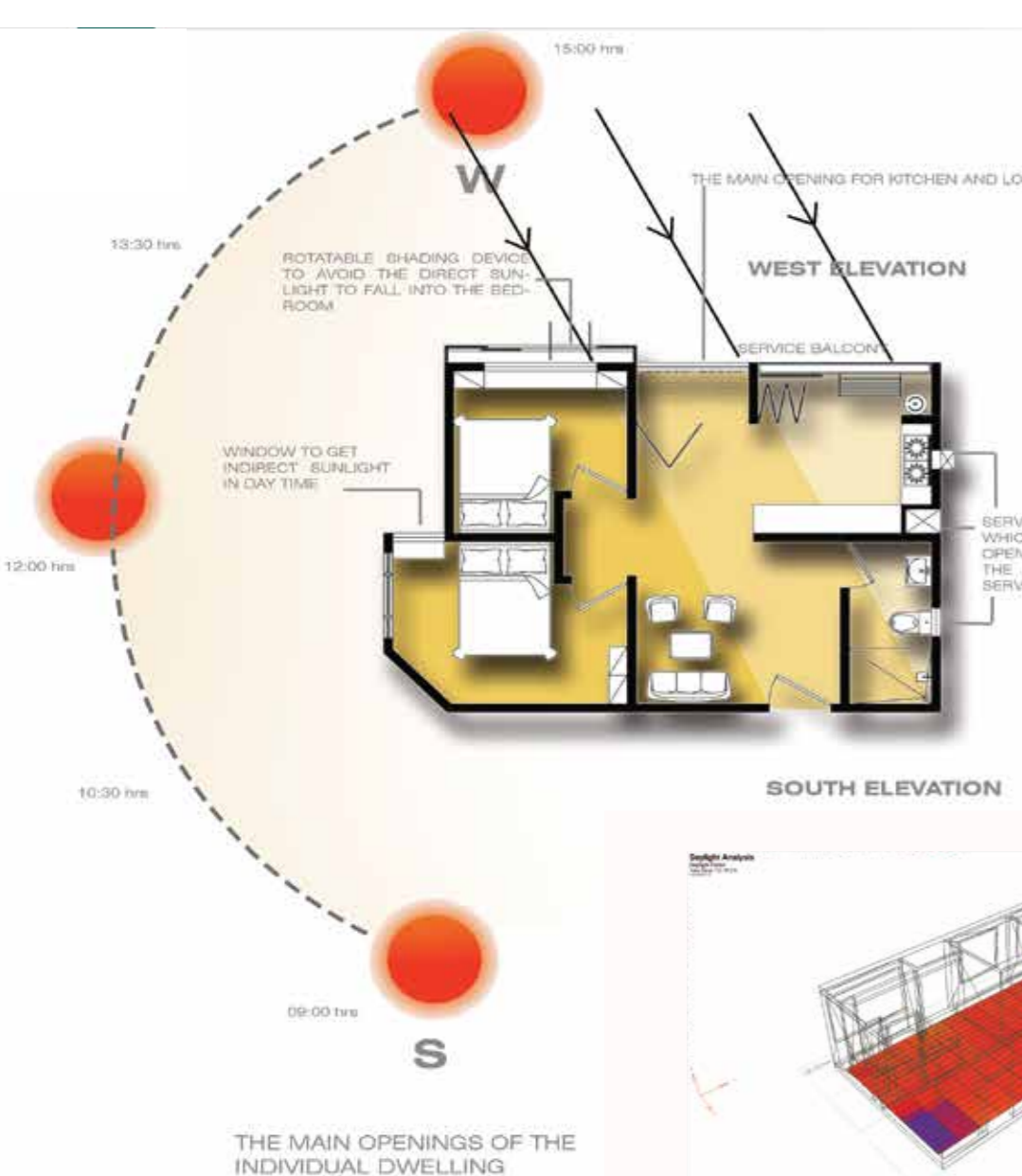


### BRIEF

- BEDROOMS (1/2/3 NOS)
- LOBBY
- DINING AREA
- BATHROOM
- OPEN KITCHEN
- DRYING AREA
- MINI PLANTING AREA



The opening for kitchen and living area - the balcony and service balcony



- WEST ELEVATION IS THE MOST EXPOSED AREA TO THE DAY TIME SUN
- SUN LIGHT INTENSITY IS VARIABLE IN DIFFERENT SPACES OF THE UNIT.
- MID DAY SUN HAS DEVIATED INDIRECTLY TO THE INDIVIDUAL HOUSING UNIT BY PLACING THE WINDOW IN A JUTTED OUT BOXED SPACE.
- THE HIGH INTENSITY AREA WILL BE COVERED BY A ROTATABLE SHADING DEVICE WHICH WILL ACT AS A FACADE.
- OTHER AREAS LIKE KITCHEN AND LOBBY IS NOT DIRECTLY EXPOSED TO MID DAY SUN, AND GREEN TROUGHS WILL ACT AS A BUFFER TO THE AREA.



- A. AMBIENT LIGHTING**
- USED IN KITCHEN AREA, LOBBY, BEDROOMS AND SERVICE BALCONY TO LIGHT UP THE ENTIRE SPACE UNIFORMLY.
  - FIXED IN THE AREAS THAT NEED TO ILLUMINATE THE SPACE AS MUCH AS POSSIBLE.
- TYPES OF FIXTURES USED :**
- CEILING / SLAB MOUNTED FIXTURE
  - WALL - MOUNTED FIXTURE
  - PENDANT LIGHT FIXTURES
- B. TASK LIGHTING**
- BRIGHTER LIGHT STRIPS WITH SMALLER FOCAL POINTS ARE PLACED IN KITCHEN WORK TOPS AND COOKING AREA TO ILLUMINATE THE TASK.
  - INDEPENDENT FROM THE KITCHEN'S OVERALL LIGHTING SWITCH.
- TYPES OF FIXTURES USED :**
- LED STRIPE BAR UNDER CABINET
- C. ACCENT LIGHTING**
- USED IN LOBBY ENTRANCE TO FOCUSED TO GIVE A LIGHTING EFFECT TO THE WALL HANGING AND IN BEDROOMS.
  - THIS LIGHT FIXTURES HAVE USED TO HIGHLIGHT THE WALL HANGING WHILE PROVIDING EXTRA ILLUMINATION TO THE SPACE.
- TYPES OF FIXTURES USED :**
- WALL - MOUNTED FIXTURES



The interfloor connective communal space



Lift and staircase lobby



The corridors with seating



## INTERIOR MATERIAL STUDY

### FLOORING

- LIVING AREA } STAINED CEMENT CUT FINISH FLOORING
- DINING AREA } - SPACE SEEM LARGE WITHOUT GROUT LINES AND JOINING
- BEDROOMS } - HELP LIGHTEN THE SPACE IN SUNNIER SPACES.
- KITCHEN } - EASY TO CLEAN SINCE THERE ARE NO CRACKS OR CREVICES
- SERVICE BALCONY } - DURABLE
- } - EASY TO PERSONALIZE

### BATHROOM

- TILE FLOORING
- EASY TO MAINTAIN
- WATER RESISTANT
- DURABLE
- AFFORDABLE

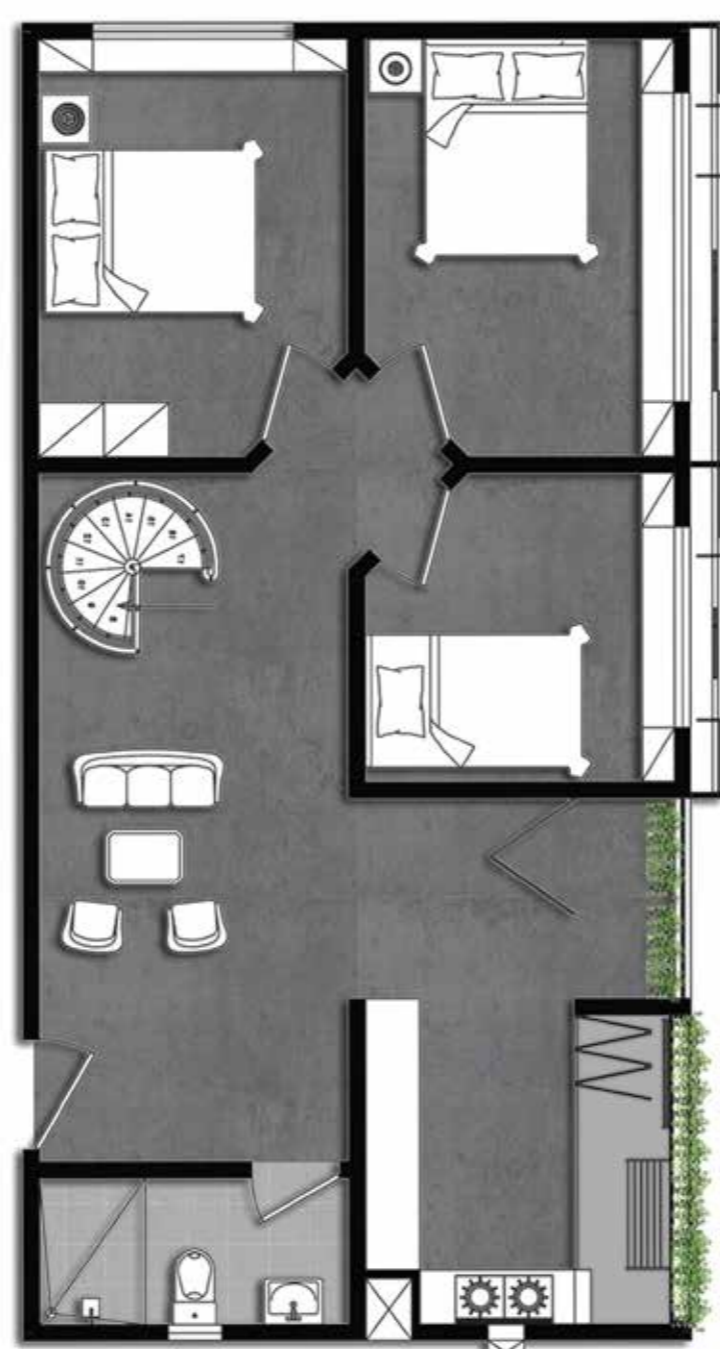
### WALLS

CALCIUM SILICATE BOARD AS FACE PANEL, CEMENT, EPS AND FLY ASH AS CORE  
LENGTH: 2270MM, WIDTH: 610MM, THICKNESS: 60MM, 75MM, 90MM, 100MM, 120MM, 150MM, 180MM

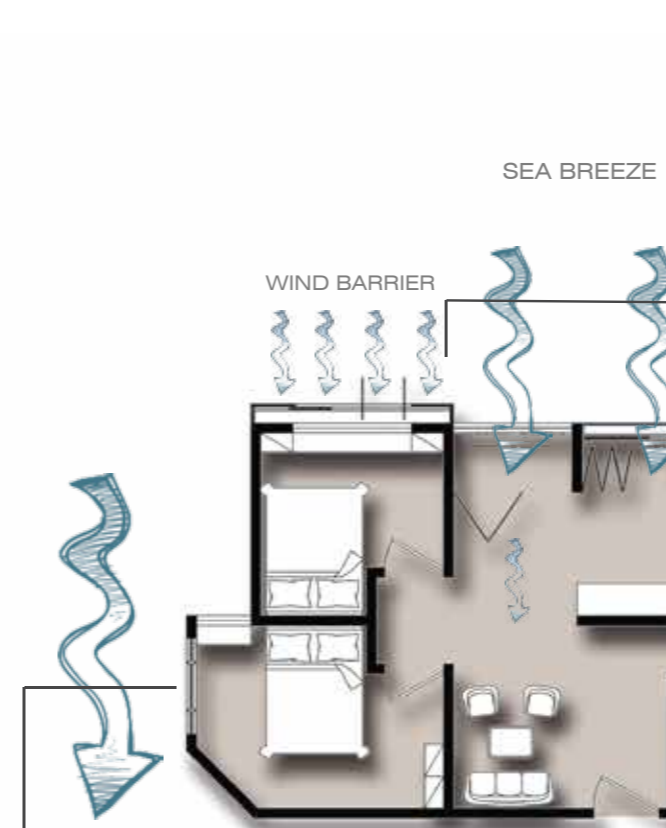
- ENERGY-SAVING, LIGHT WEIGHT, ENVIRONMENT-FRIENDLY
- AREA SAVING, WATERPROOF AND DAMP PROOF
- FIRE-PROOF, A GRADE
- SOUND-INSULATION
- BEST HANGING FORCE
- ANTI-SEISMIC AND IMPACT RESISTANCE: WIND LOAD 65M/SECOND, LARGEST SPAN AND HEIGHT THIN WEBBED WALL
- MOST CIVILIZED, HEALTHY AND HIGH EFFICIENT CONSTRUCTION
- EXPOSED SLAB

### FIXTURES

- KITCHEN WORKTOP
- BATHROOM APPLIANCES



## INTERIOR VENTILATION

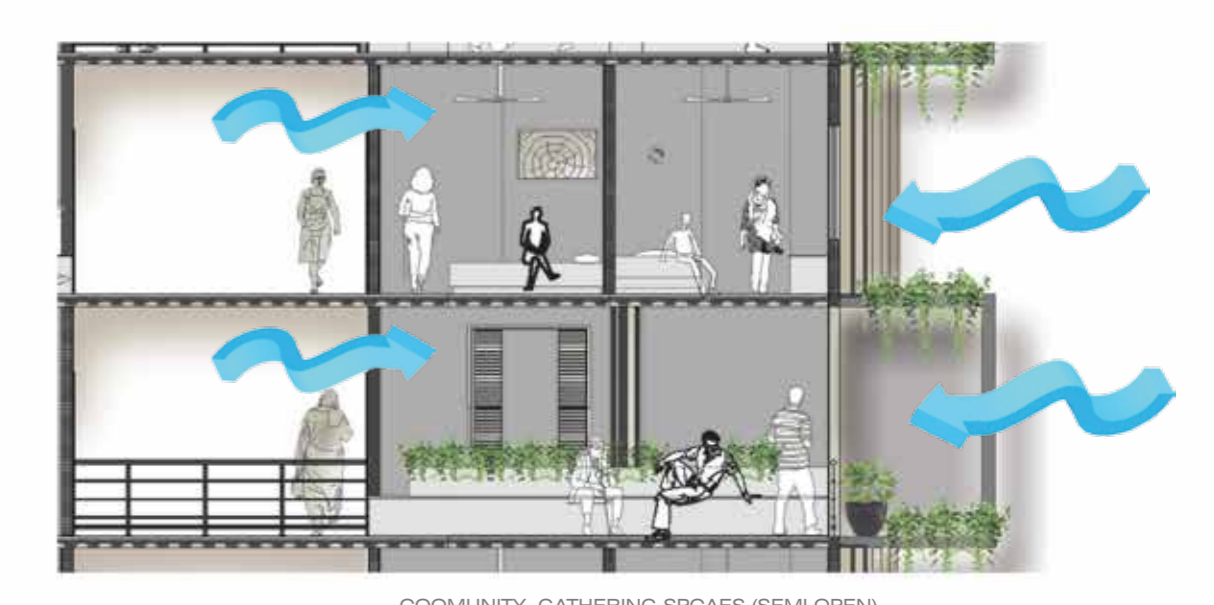
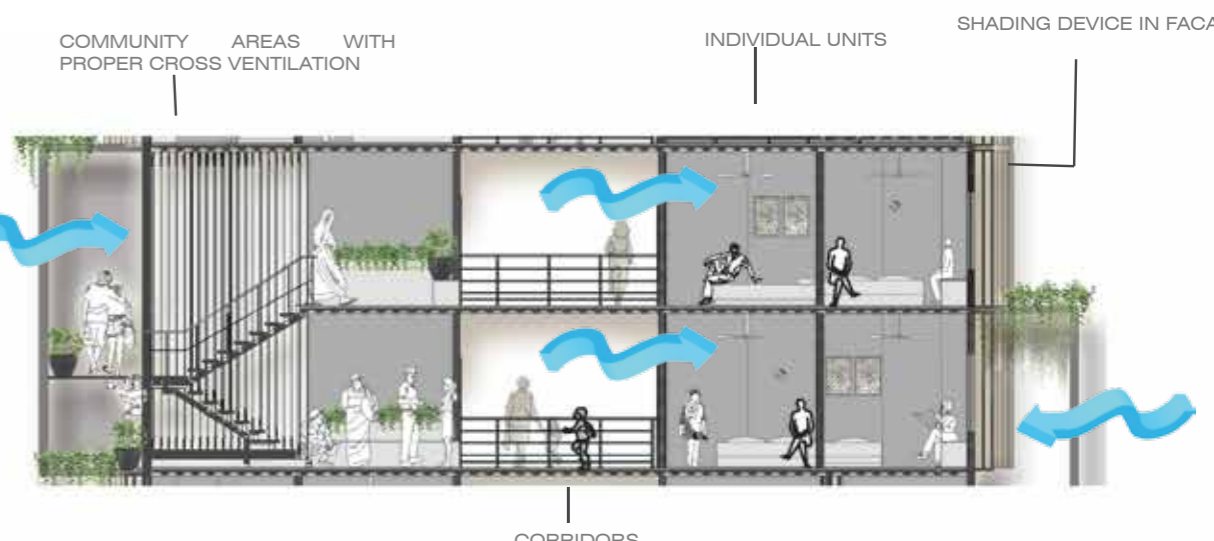


VELOCITY OF THE WIND IS HIGH AND IT WILL CREATE A PRESSURE DIFFERENCE INSIDE AND OUTSIDE OF THE BUILDING, WHICH WILL CREATE A WIND FLOW INTO THE BUILDING THROUGH THE OPENING.

- INDOOR SPACES SUCH AS BEDROOMS, LOBBYS, COMMON AREAS AND CORRIDORS ARE NATURALLY VENTILATED FROM EITHER SIDES IN BOTH ELEVATIONS.

- A WIND TURBULANCE OCCURED IN THE SERVICE GAP IN BETWEEN THE DWELLINGS.

- MULTI LEVEL GREEN TROUGHS ARE CREATED AS A BUFFER TO THE DIRECT SEA BREEZE.



WIND FLOW DIAGRAMS INSIDE THE SPACES

# Street views



The church street



Justice akbar road front



Wekanda jumma masjid road



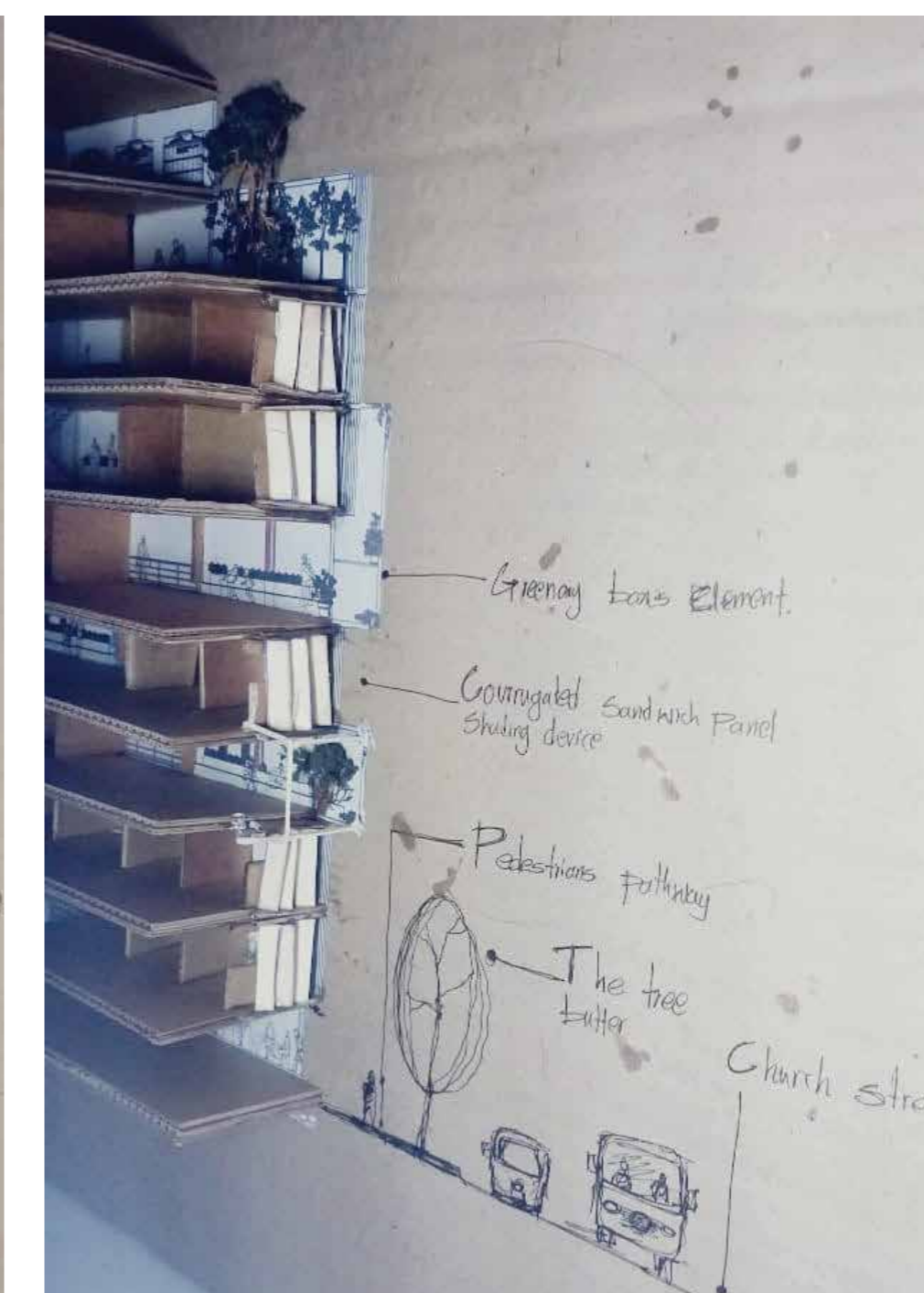
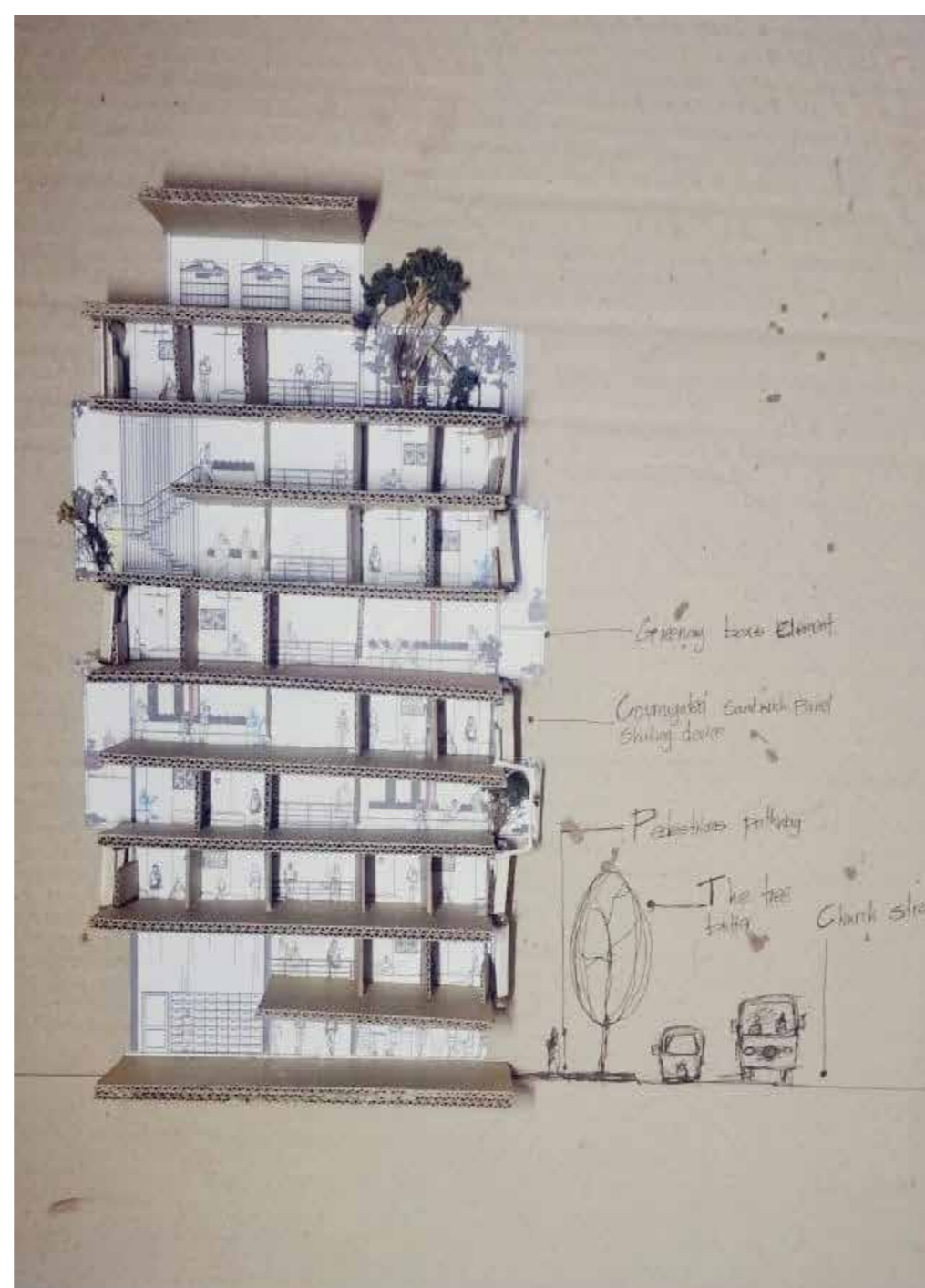
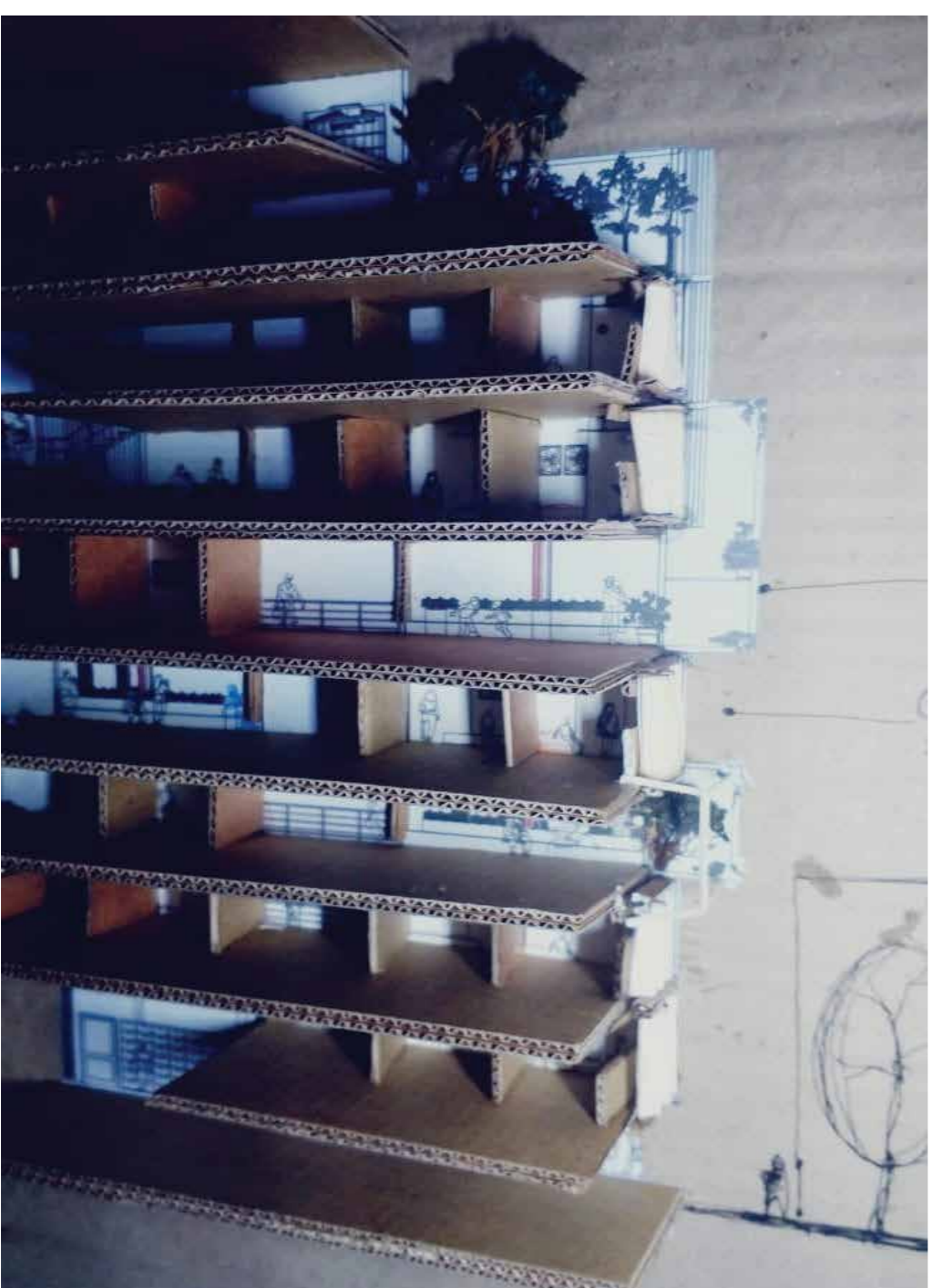
The communal spaces, lobbies and corridors



The interior imagery



# Model images



The light study

